



State of Montana
State Information Technology Services Division

Montana Information Technology Expenditures

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The Appendix is located in a separate Excel file.

Appendix A - Montana IT Expenditures and Staff for Fiscal 2012

Appendix B - Montana IT Expenditures - FY2004 to FY2012

Appendix C - IT SABHRS Account Codes

Appendix D - IT FTEs

Appendix E - State Statistics on Budgets, IT Staff and IT Expenditures

Appendix F - IT Expenditure Financial Ratios

Appendix G - IT Services by State

A. Introduction

Montana's CIO commissioned this report to gather information relative to Montana's IT expenditures. State IT expenditures are not normally tracked by the Legislative Fiscal Division nor SITSD. The first attempt at studying Montana's IT expenditures was done in 2005 as part of the Biennial Report on Information Technology.

In 2011 HB 642 created the Select Committee on Efficiency in Government. The Select Committee created an IT subcommittee in August 2011 to address "how the state could more efficiently and effectively provide IT services within state government". Unfortunately the Committee's final report did not contain an analysis of Montana's IT expenditures or comparisons to other states.

The objectives of this report are:

- Produce statistics relative to Montana's overall IT expenditure
- Make IT financial comparisons to peer states
- Develop insights on the IT economic and infrastructure differences between Montana and peer states.

The analysis was restricted to peer states for two reasons. First, a study covering 50 states would require too much time and effort relative to the value of the resulting information. Second, IT economies of scale distort comparisons between large states with tens of millions of people and Montana with 1,000,000 people. This research focused on states because they have common functions and activities that are different than the responsibilities of federal agencies or local governments.

B. Montana IT Expenditures and Staff

The analysis gathered data from a variety of sources including LFD reports, SABHRS, agency web sites, and early IT Biennial Reports. The main financial statistics for FY2012 are in Table 1.

Table 1

Component	FY2012 Expenditures
Total State-wide IT Expenditures	\$169,022,401
IT expenditures as a percentage of State operating budget	3.73%
IT FTE	850
IT FTE as a percentage of State FTE	6.48%

Appendix A provides an agency and state-wide perspective that produced Table 1. Details on the data sources, quality of the data, accuracy and estimates can be found in Appendices B, C, and D.

The investigation was expanded to earlier years to check whether FY2012 was typical. FY2010 and FY211 were chosen as recent comparison years. FY2004 figures were available from the January 2005

IT Biennial Report. FY2009 numbers on IT personal services costs and FTE staff counts were available due to previous SITSD FTM work. The details for these fiscal years can be found in Appendix B.

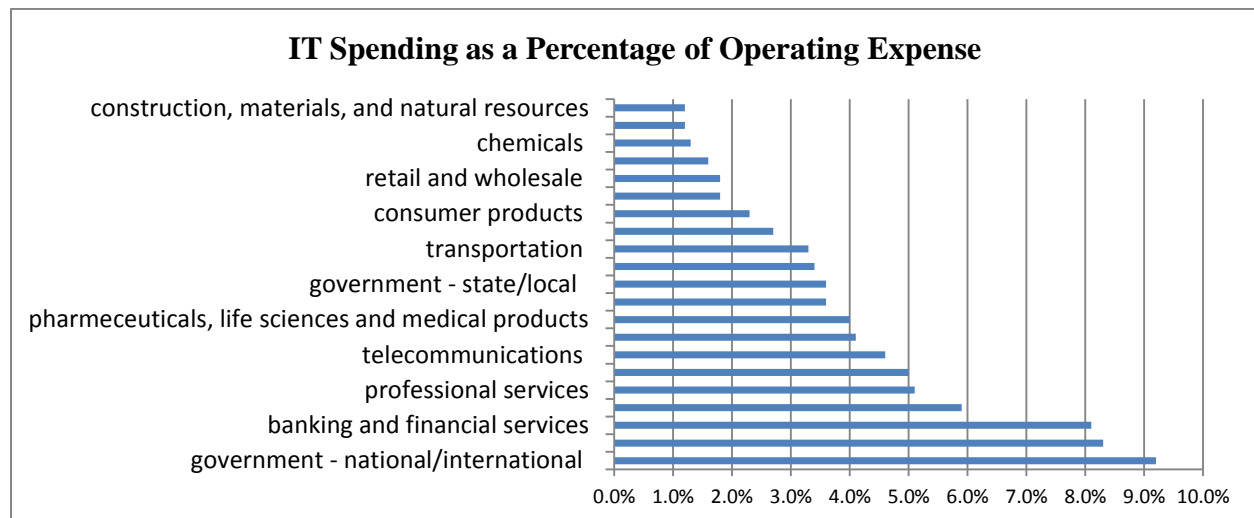
The statistics in Table 1 are *conservatively low*. Many IT expenditures are not recorded as IT expenditures in SABHRS because accounting staff have not received training on IT coding. For example, consulting services is often used instead of IT consulting services. The IT FTE statistic is also conservatively low. Positions such as data processing technician, document processor, and management analyst were not counted since specialized IT education and experience was not a prerequisite. Over 140 such positions were not classified as IT positions for this study.

The financial expenditures for any single agency should be viewed with caution. IT expenditures are often not recorded with specific IT codes in SABHRS, so the estimate of total Montana IT expenditure is *conservatively low*. Routine agency IT expenditures are also occasionally distorted by large capital IT projects.

C. Gartner Comparison

Knowing Montana's IT expenditures is useful, but real knowledge comes from developing insights based on valid comparisons. The first comparison is based on Gartner's annual survey of IT spending: *IT Key Metrics: IT Spending and Staffing Report, February 2013*. Gartner's survey demonstrates that there is an extremely wide variance in IT spending by industry, with some industries spending 8 times as much as other industries. The state/local government average of 3.6% fell close the overall average for all industries.

Chart 1



Greater precision can be found by looking at the detail for state and local governments, and the appropriate sized government segment. The table below is produced from the *IT Key Metrics Data 2013: Key Industry Measures: Government: State and Local Analysis: Current Year, December 14, 2012*.

Gartner defines total annual IT spending as the “*annualized 'cash flow view' basis, and, therefore, contains capital spending and operational expenses, but not depreciation or amortization.*” Montana falls into the 4th segment of state and local government organizations based on operating budget size. Montana’s operating budget in FY2012 was \$4.5B for purposes of this comparison.

Table 2

Statistic	Gartner (\$1B to \$10B in operating expense)	Montana
IT spending as a percent of operating expense	2.6%	3.73%
IT spending per employee	\$5,494	\$12,892
IT FTEs as a percentage of all employees	3.3%	6.48%

From all perspectives Montana spends far more on technology than the Gartner survey respondents. Gartner’s sample has 31 state and 75 local governments.

D. Peer State Comparison

In an attempt to get more information and a better frame of reference, the analysis was extended to peer states; states that are comparable to Montana in population. IT economies of scale distort financial comparisons between states of unequal sizes. Initially 12 states were chosen on the basis of population. State population estimates came from the USDA Economic Research Service for 2012. [USDA ERS - State Fact Sheets](#)

Table 3

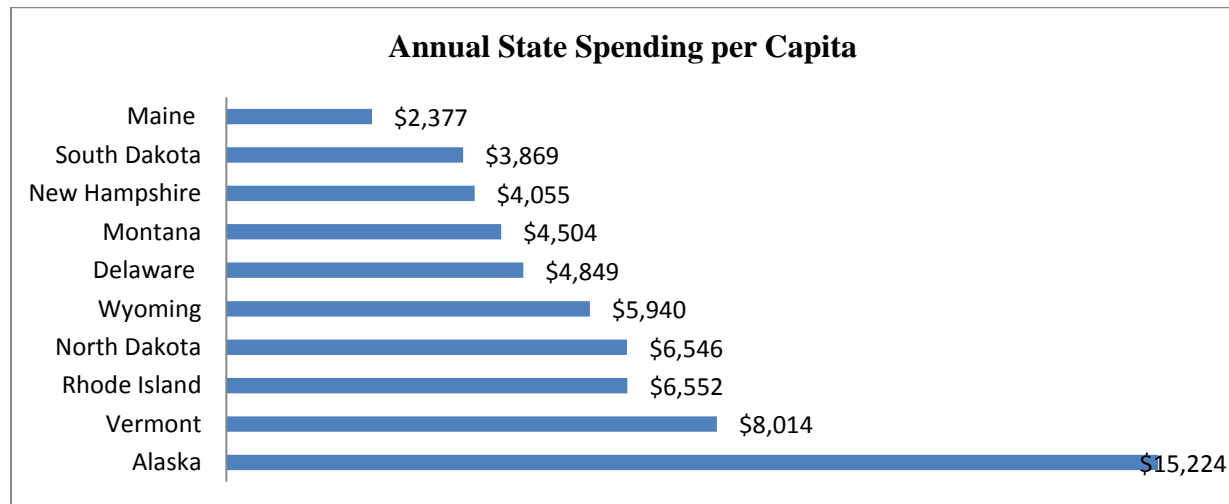
State	2012 Estimated Population
Wyoming	576,412
North Dakota	699,628
Vermont	626,011
Alaska	731,449
South Dakota	833,354
Delaware	917,092
Montana	1,005,141
Rhode Island	1,050,292
New Hampshire	1,320,718
Maine	1,329,192
Hawaii	1,392,313
Idaho	1,595,728

Idaho and Hawaii were excluded from most of the statistical comparisons since they do not track IT as a separate line item expenditure and they publish very limited amounts of information to the web. The next largest states by population (1,800,000) are Nebraska and West Virginia. They were not included as part of the sample since they were roughly 3 times the size of the smallest sample states and 40% larger than the largest states in the candidate pool. These exclusions limited the effective sample to the first 10 states in Table 3. Appendix E contains the operating budget, IT staffing, and IT budget data on the sample states. Data was obtained from the states' public web sites.

State Expenditures and Staffing

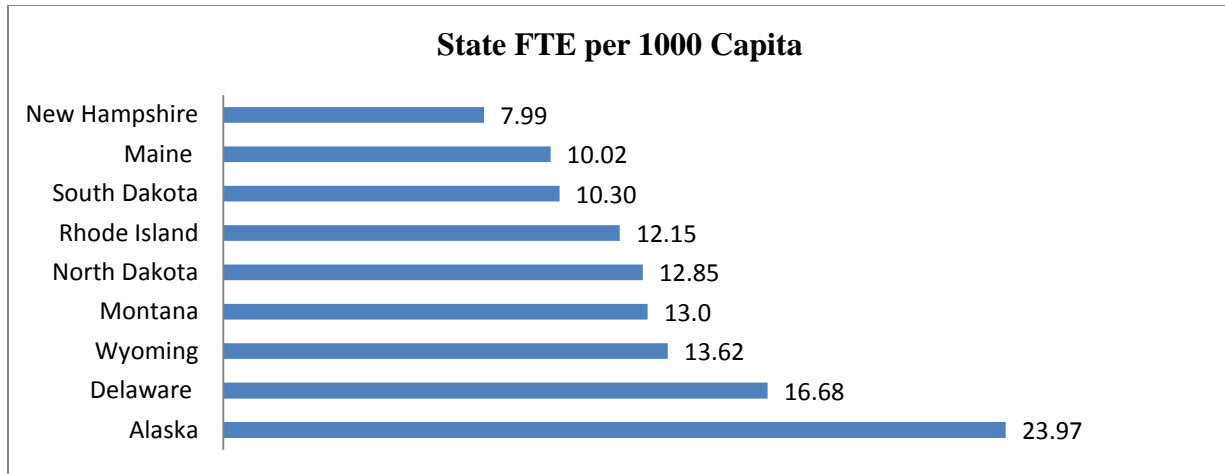
The first step is a review of state expenditures per capita. If Montana was wildly different than states of comparable size, inferences and conclusions would have to be adjusted. Montana is below the \$6188 average expenditure per capita, but definitely not an outlier. Alaska is the real anomaly. Without Alaska the average expenditure per capita is \$5184.

Chart 2



Staffing levels may also influence conclusions of how IT is used within a state. States have different philosophies on the number of state employees they are willing to support. Again Montana falls in the middle of the pack on its ratio of state employees.

Chart 3

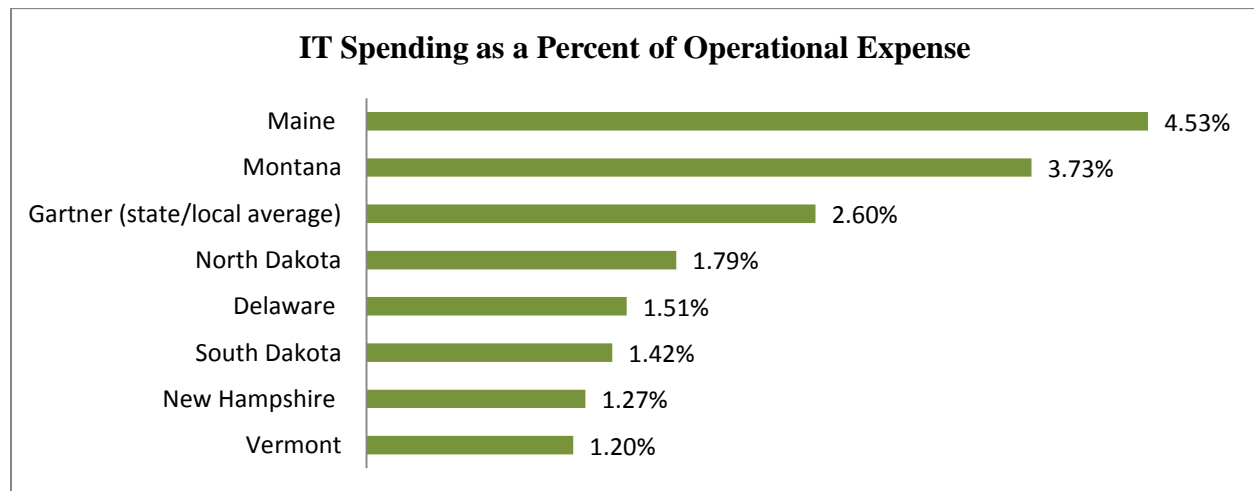


New Hampshire and Maine are very frugal with state employees and Alaska is just the opposite. The average, again excluding Alaska, is 13.65 state FTE per 1000 capita. Comparing Montana's IT expenditures to peer states poses no major problems except for Alaska.

State Comparisons on IT Expenditures

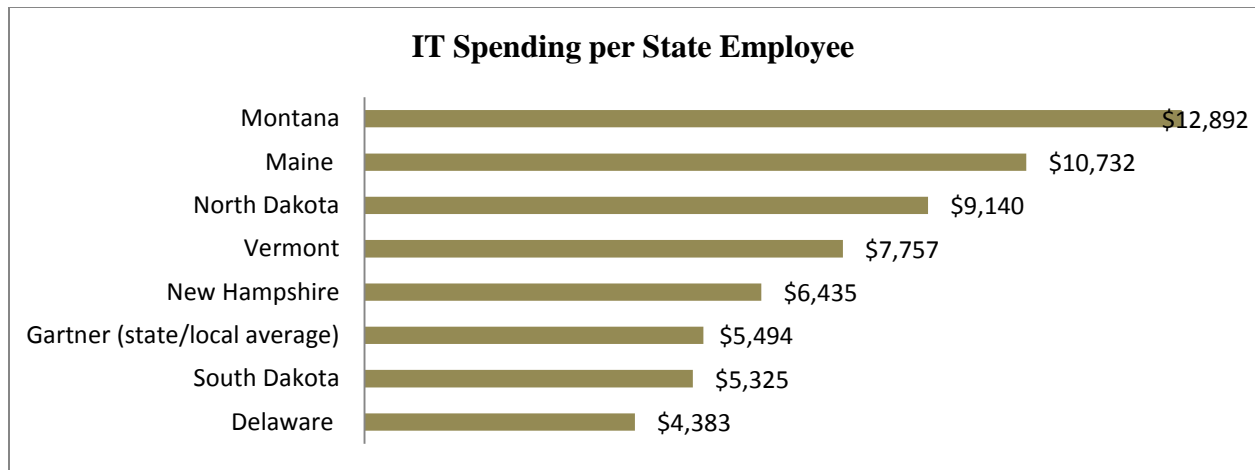
Appendix E: State Statistics on Budget, IT Staffing and IT Expenditures was the starting point for the creation of financial ratios for comparisons. The details on the ratios can be found in Appendix F: IT Expenditure Financial Ratios. The financial ratios are presented graphically in the next 5 charts. At the bottom of each chart are comments that point out issues and considerations when interpreting the charts. Not all states are represented on each chart due to lack of information in some areas.

Chart 4



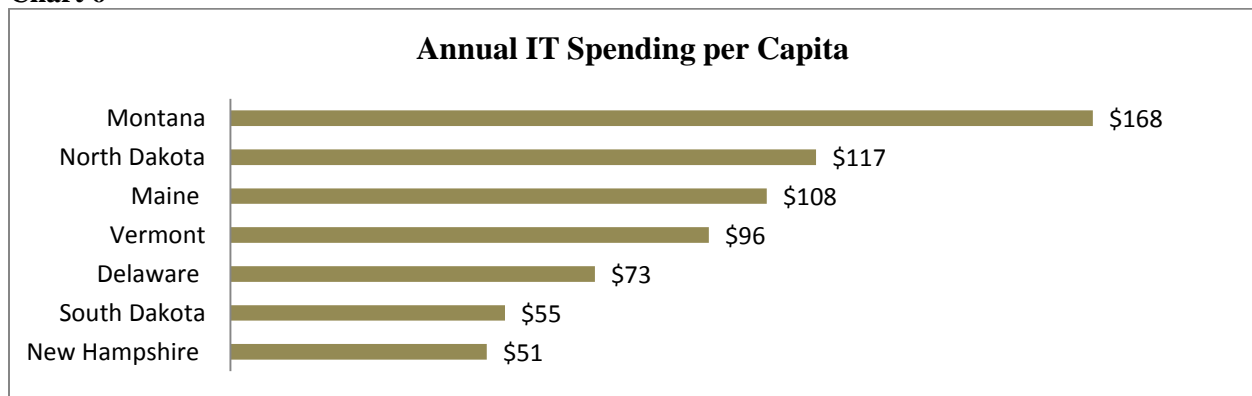
What is most significant is that many states are achieving very low rates of IT spending. They are far below Gartner's average, and less than half as much as Montana. The main question is whether the low-IT-spend states deliver IT services in quantities and quality equivalent to Montana, a very high-IT-spend state.

Chart 5



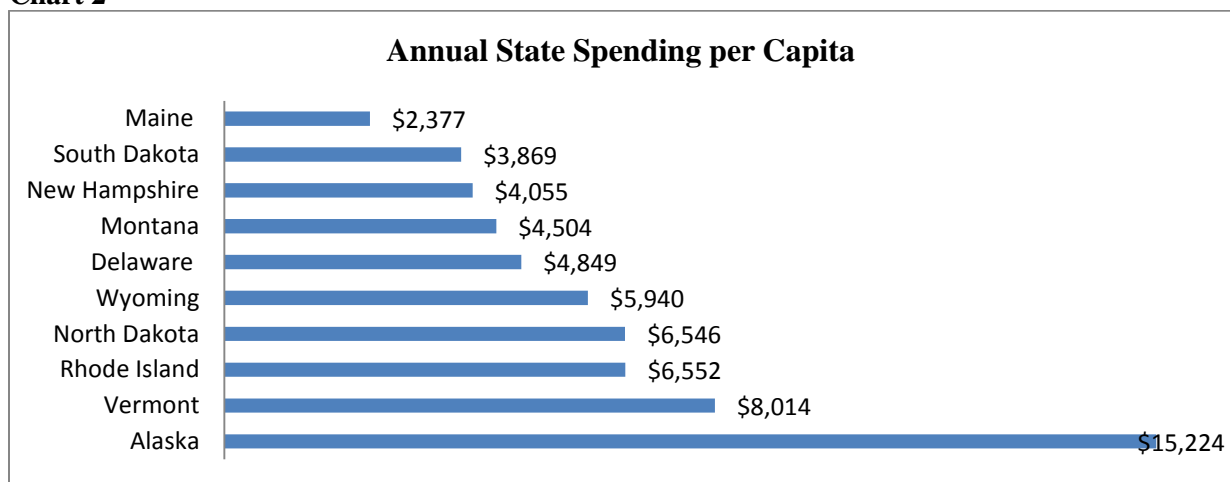
Maine and Montana are again the largest IT spenders. The next two charts show where Montana and Maine diverge.

Chart 6



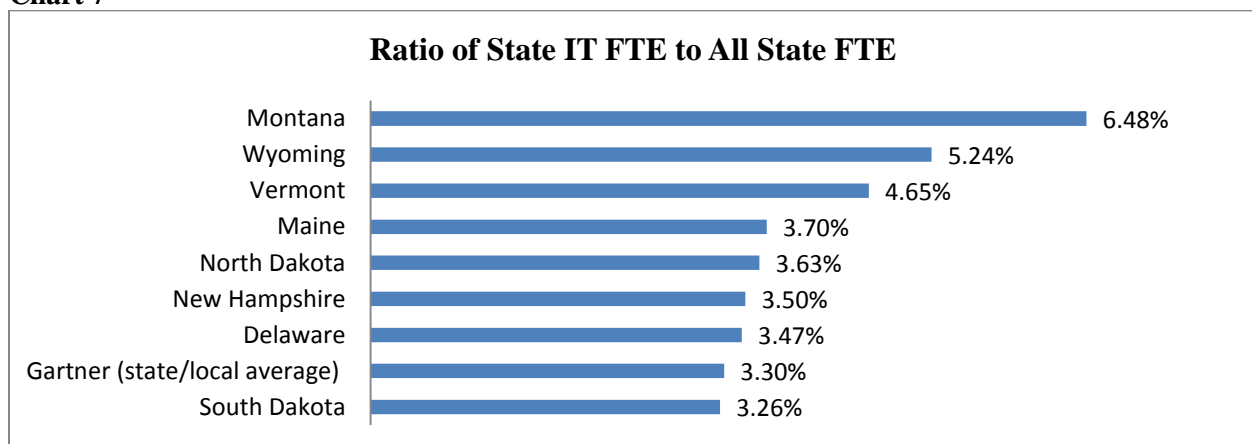
Montana's IT spending per capita is double the peer state average (\$83) and 44% higher than Maine.

Chart 2



Maine is spending roughly half of what Montana spends per person. Maine is extremely conservative on state staff and state spending, and they appear to be compensating somewhat by spending proportionately more on IT.

Chart 7



Observations

Montana's peer states manage to run their state operations with fewer IT people and consume a much smaller proportion of their state budgets. Montana's IT expenditures are significantly higher by almost every measure. Are these results due to political, administrative, management or agency decisions to pay more for IT and receive more value and benefits in return? Or are the results due to some other causes? The next section attempts to answer the question "Is Montana's IT service clearly superior in quality or scope?"

E. Quality/Value of IT Service

The quality and value of Montana IT services might be far above average, resulting in a cost of IT service delivery far above average. It is beyond the scope of this report to attempt to rate the quality or value of IT services delivered by Montana or peer states. Fortunately there is an organization that claims to make such an evaluation.

Every two years the Center for Digital Government rates the states through the Digital States survey. The survey is a comprehensive review of the technology practices of state government. Evaluation criteria include:

- Strategy, approach, implementation or actions are shown to be consistent with and in support of state priorities and policies to improve operations and/or services (35 percent).
- A quantifiable and demonstrable return on investment in hard dollar savings and/or soft dollar benefits has been achieved (25 percent).
- Demonstrated and verifiable progress over the previous two years, either through a new initiative or incremental improvement of an existing program or effort (15 percent).
- Innovation or creativity was used in the solutions or approaches (15 percent).
- Demonstration of effective collaboration including multijurisdictional and interdepartmental (10 percent).

The results of the last 6 surveys are in the table below. In the early years the states were assigned a rank number. In later years the states received a letter score.

Table 4

Year	State Scoring on Governing's Digital States Survey									
	SD	ND	ME	DE	WY	MT	RI	VT	AK	NH
2012	C+	B	C	B-	C	C+	C	C	C	C
2010	B+	B	C+	B-	C	C+	C+	C+	C+	C
2008	8	17	14							
2006	7	23								
2004	6	21	13		18	14				
2002	9		16	22						
	5	5	3	2	1	1				

The bottom row counts the number of times a state exceeded the average state ranking. The peer states exceeded the average score only 17 times out of 300 assessments (6 years x 50 states). One obvious conclusion is that smaller states are having great difficulty competing with large states. Yet there are three states (South Dakota, North Dakota, Maine) who are scoring much better than Montana. Montana's single above-average score in 6 surveys indicates that Montana's value from IT services is poor, and it provides no justification for the exceptionally high IT expenditures in Table 2 and Charts 4, 5, 6 and 8.

This comparison is based on the use of the Digital States Survey as measure of the quality of a state's IT infrastructure and operations. The Digital States Survey is certainly an independent assessment, but unfortunately it is the only assessment available.

F. Breadth of IT Service

Montana's higher IT expenditures might be related to the number of services delivered and the quantity of each service delivered. The states don't publish statistics on the quantity of services (numbers of servers, images stored, web sites hosted, etc.) but they do publish catalogs of IT services. The catalogs provide a view into the scope and variety of IT services offered by their central IT organizations. For states that have only a central IT organization, their service catalogs define the scope of all IT services in the state.

Table 5 contains a count of the number of IT services provided by various peer states. New Hampshire, Wyoming and Rhode Island don't publish their service catalogs to the web. The number of IT services in the table may appear low, but related rates/services were grouped. Montana has 7 rates for email functions, but they were counted as a single service, email. The same methodology was used for all the states. Details can be found in Appendix G: IT Services by State. The numbers should not be considered exact since the counts depended on the granularity and quality of the published catalogs.

Table 5

Montana	South Dakota	Vermont	Maine	Delaware	North Dakota
38	25	26	34	35	45

If SITSD's scope of IT services was much broader than other states, it could be one reason behind Montana's high IT expenditures. A wide breadth of service would show a count much higher than peer states. Montana's count of 38 is higher than the 33.4 average for the other states, but North Dakota is the highest by far. Additional factors also indicate that SITSD's scope of services may only be average.

- Delaware's network covers K-12 in addition to state agencies.
- Delaware supports an email system for K-12.
- South Dakota supports a radio public broadcasting system.
- Delaware and Maine provide a public safety radio network.

- North Dakota is responsible for a records management system.

Overall the data is not conclusive and definitely does not support a conclusion that Montana's high IT costs are directly related to a broad scope of IT services unmatched by other states.

G. IT Economies of Scale

The statistics and graphs illustrate that Montana has an IT spend that greatly exceeds peer states and Gartner's average for state/local governments of comparable size. The obvious question is "why?" What makes Montana different? Sections E and F attempted to look at the quality and breadth of Montana IT services for the reasons behind the findings. Neither section presented a conclusive argument that would satisfy a scientist, but the analysis provides evidence that the basis for Montana's high IT spend does not lie with outstanding value or breadth of Montana IT services.

Part of the answer may be found in Gartner's survey data and Montana's internal financial numbers. Gartner's annual survey validates IT economies of scale for state and local governments. The IT percentage of operational expense decreases as the size of the state/local government organization increases.

Table 6 - Gartner: IT Spending as a Percentage of Operating Budget

State/Local Government Operating Budget Size				
Under \$250M	\$250M to \$500M	\$500M to \$1B	\$1B to \$10B	\$10B plus
5.2%	4.9%	2.2%	2.6%	2.1%

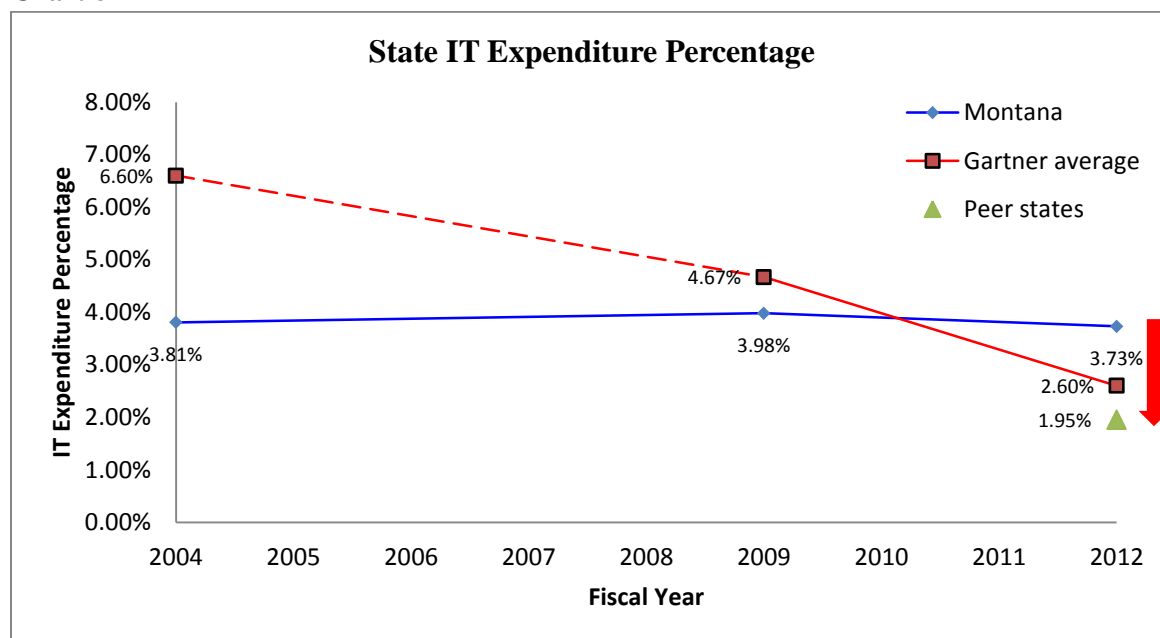
This result was expected; economies of scale are common. What is a little unexpected is that Montana also exhibits some of the same economies of scale across agencies.

Table 7 - Montana: IT Spending as a Percentage of Operating Budget

Montana Agency Operating Budget Size			
Under \$10M	\$10M to \$50M	\$50M to \$100M	\$100M plus
13.0%	12.4%	10.8%	2.5%

Could the main factor behind Montana's high IT costs be Montana's IT organizational structure? Montana is a decentralized IT state; only 20% of all IT FTE are located within SITSD. Six of the 9 peer states have legislation or an executive order mandating complete executive branch IT consolidation.

Chart 8



The potential financial advantages of consolidation/centralization to Montana are impressive. If Montana could drop its ratio of IT spending from the current 3.73% (\$169M) to the 1.95% average of peer states, Montana would see a \$80,700,000 drop in annual IT spend. \$80.7M in one-time savings is outstanding. \$80.7M in annual savings is equivalent to DOJ or DLI's annual operating budget.

H. State IT Consolidation

Centralization or consolidation is not a new concept for the states. Consolidation through sharing of IT infrastructure goes back many decades. Even Montana has had a single network and consolidated email system for 20 years. State IT organizational consolidation dates back to the mid-1990s. North Dakota, South Dakota and Mississippi led the way. Today 19 states have completely consolidated their state IT organizations.

In 2005 the concepts of IT consolidation and shared services started to make national headlines. Gartner published 4 research articles in 2005 on IT organizational structure, consolidation and shared services. The private sector was not far ahead of the government sector. The NGA Center for Best Practices published "*Review of State IT Consolidation Efforts*" in December 2005 and the National Association of State Chief Information Officers (NASCIO) published "*IT Consolidation and Shared Services: States Seeking Economies of Scale*" in March 2006. The report was the result of a 2005 NASCIO survey on IT consolidation and shared services. 14 states were listed as examples of IT consolidation or shared services. Three of Montana's peer states were named as IT consolidation pioneers: Delaware, Maine, and North Dakota. Although South Dakota was not listed, its consolidation efforts started in 1996. Today consolidation is still a state priority. NASCIO's *Advancing the C⁴ Agenda*

has consolidation as one the four Cs. Ohio gathered the following statistics on state infrastructure and system consolidation initiatives.

Table 8*

State Consolidation Initiatives	Underway (planning, in process, or complete)	No Consolidation Underway
Data Center	94%	6%
Email	92%	8%
IT infrastructure (servers, networks, etc.)	88%	12%
Disaster Recovery	70%	30%
Applications	26%	74%
Financial/HR systems	82%	18%

* *IT Optimization* State of Ohio, April 24, 2013

Organizations consolidate their IT infrastructure and organization for many reasons. Cost savings, government efficiency and effectiveness are usually the primary motivations. Maine's primary consolidation objective was to break down agency system silos to deliver better citizen service. Maine's governor cited the example of a citizen who had to miss work for three separate agency interviews to qualify for state benefits. The three agency systems did not share data. Ohio is advocating a shared/consolidated IT infrastructure that aims to save \$150M on their annual \$830M IT expenditure.

The states listed many reasons for consolidating their IT organizations.

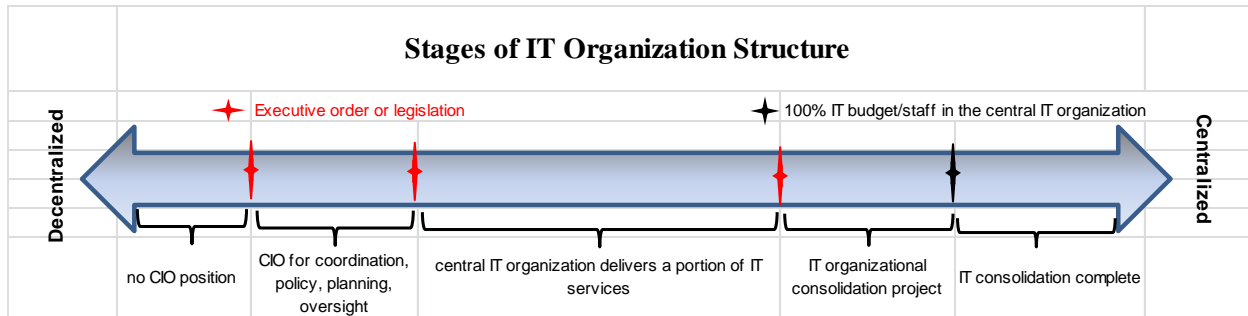
- Cost effectiveness
- Cost savings
- Enhance service delivery to citizens
- Efficient delivery of state services
- Improve data sharing
- Reduce redundancy
- Combine data collection
- Improve IT planning
- Increase accountability
- Improve prioritization of programs and projects
- Consistent policies and standards

Measuring state migration to shared IT services or a consolidated IT organization is difficult. Each state has dozens of major IT systems that could be shared, and each state has their unique organizational structure and departmental responsibilities. Measuring the quantity or scope of shared systems proved to be unmanageable, so this analysis focused on state IT organizational structure.

State IT organizational structure can be measured by looking at the state entities (agencies, state-wide CIO, central IT organization, etc.) and the scope of their authority. A consolidated state IT infrastructure is recorded in state statute or executive order. Statutes and executive orders provide time stamps when each state takes a step toward consolidation, or a decentralization step in the opposite direction.

Chart 9 outlines the stages between a decentralized (left) and centralized (right) state IT organization. If a state moves left or right, movement can be measured by the executive orders or legislation that grant or remove authority and responsibility. Since most states' IT organizations started from a point of decentralization, legislation and executive orders usually track movement to a more centralized or consolidated IT structure.

Chart 9



Statute and executive orders track the key points in time for specific events that mark a step toward IT consolidation:

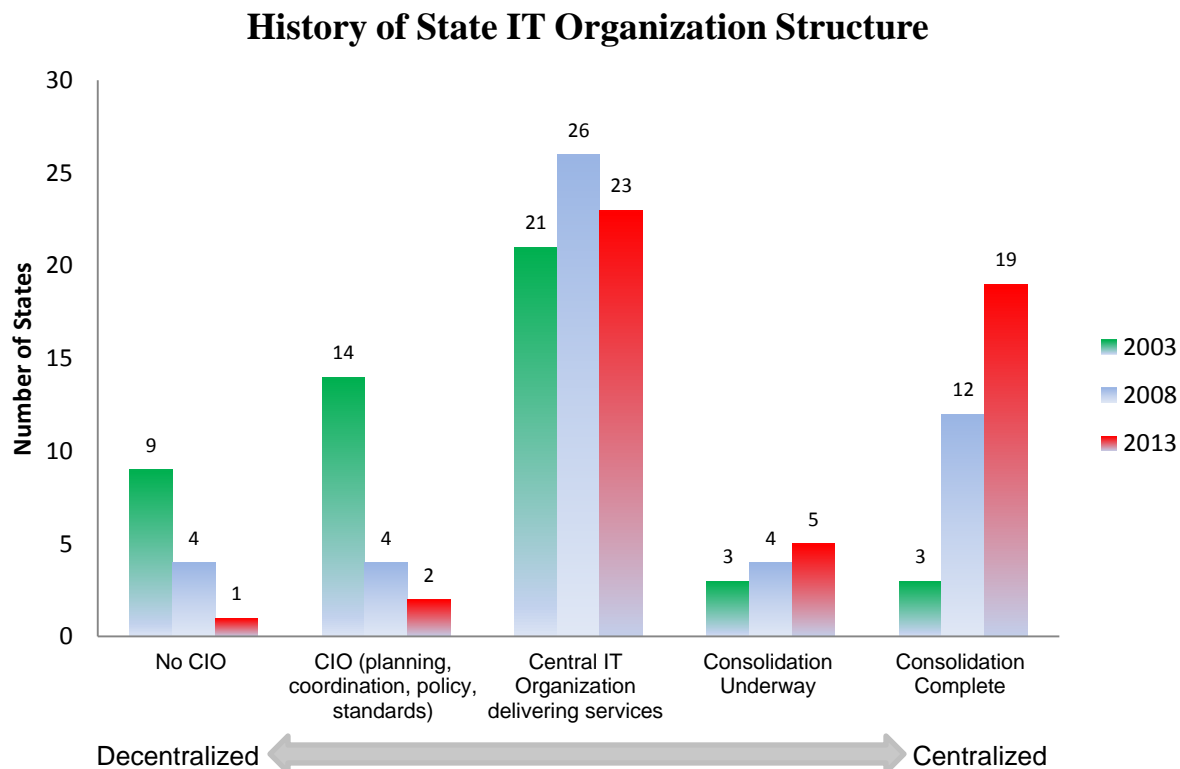
1. Creation/appointment of the state's first State Chief Information Officer with responsibilities for IT coordination, policy, standards, procurement oversight and planning. This is a common initial step a state takes to address inter-agency IT cooperation.
2. A central IT organization is tasked with delivering a limited set of shared IT services. This is usually the second step towards consolidation, although some states like Montana have a central organization delivering IT services prior to the creation of the a state CIO.
3. The state mandates complete IT consolidation through legislation or executive order.
4. IT consolidation completed. All IT FTE are employees of the central IT organization and the state's entire IT budget is allocated to the central IT organization. Normally consolidation takes 2-5 years. This analysis used an average of 3 years from the effective date of legislation or executive order.

The stage of each state relative to IT consolidation was recorded at three points in time:

- 2013 (today)
- 2008 (5 years earlier)
- 2003 (10 years earlier)

The number of states in each stage were plotted in Chart 10.

Chart 10



In 2003 (green columns) most states were predominately on the left side of the chart. Approximately half (23) had no state-wide CIO or a CIO with only coordination, planning, policy, and standards authority. Only 6 states were on a path to complete IT consolidation. Ten years later in 2013 (red columns) most states are predominately on the right (centralized, consolidated). About half of the states (24) are completely consolidated or are moving to that goal. Over the last 10 years the states have taken 57 steps to the right through executive orders or statutes on consolidation. There has been only one partial step left toward decentralization. In 2006 Oregon split their central IT organization into two parts: one part responsible for policy/planning and one part responsible for IT service delivery.

Montana's position has remained unchanged over the past 10 years. In 2003 Montana had a central IT organization delivering services and a CIO responsible for coordination, policy, and planning. In 2004 DOA/ITSD accounted for roughly 28% of all state IT expenditures. Montana was firmly in the middle stage. In 2013 Montana is still in the middle stage. No legislation or executive orders have occurred in the past 10 years and SITSD accounts for 24% of total state IT expenditures today.

States have successfully shared individual IT systems for years as a means to improve the effectiveness and efficiencies of their IT investments, but no state has reached a fully shared IT infrastructure without legislative action or executive order. State migration to a consolidated IT structure is being driven by cost efficiencies and the need for more effective government.